

#### ABSTRACT OF THE DISCLOSURE

The present invention provides an ultraviolet-responsive thin film photocatalyst and an application thereof. The present invention relates to a transparent thin film titanium dioxide photocatalyst wherein the crystal size of the titanium dioxide catalyst forming the thin film is 5 nm to 50 nm, the adsorption wavelength peak is in the range of 200 nm to 300 nm and the film thickness is 0.1 to 1.0 microns, to the aforementioned photocatalyst wherein the crystal form of the titanium dioxide forming the thin film is a mixed state of spindle-shaped crystals and cubic crystals, to a filter wherein inorganic paper having silicon carbide (SiC) or amorphous silica (SiO<sub>2</sub>) as a principal component or inorganic paper having activated charcoal, zeolite or sepiolite as a principal component is used as the substrate, and to an air sterile filtration device in which the aforementioned filter and a bactericidal ultraviolet lamp are combined.